Serum Visfatin level in patients with systemic lupus erythromatosis

Thesis

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Abstract

SLE is a classic autoimmune disease, during a flare, lupus may affect the skin, joints, kidney, brain, lung, heart and gastrointestinal tract Approximately half of all SLE patients experience kidney inflammation. Visfatin is a recently discovered adipocytokine. In addition to its potential role in glucose metabolism and atherosclerosis, visfatin has been linked with inflammation.

The study included 40 female pa ents all were diagnosed as ac vity of SLE from El Kasr El Aini hospital and 20 healthy female individuals as a control group.. All clinical and laboratory data were recorded, including visfatin using ELISA kits. We tested the correlation between visfatin and different variables.

There is a highly significant positive correlation between visfatin level and degree of severity of lupus according to the SLEDAI. . there is also a highly significant nega ve correla on between visfa n level and C3 and C4 and that confirms the significant correla on between visfatin level and degree of severity of SLE. We found also in our study that there is a highly significant positive correlation between visfatin level and urea , crea nine, 24 hours Urinary proteins in gm/day which indicate that visfatin level increases significantly in cases of active lupus nephritis.

Keywords: (SLE, disease activity, Visfatin, lupus nephritis)

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List of abbreviations

ACR	American College of Rheumatology
AgRP	agouti-related peptide
ANAs	antinuclear antibodies
Anti-SSA (Ro)	Anti Sicca syndrome A antibodies
Anti-SSB (La)	Anti Sicca syndrome B antibodies
BMI	Body mass index
CAD	coronary artery disease
CART	cocaine and amphetamine-regulated transcript
CBC	Complete blood count
CDC	Centers for Disease Control
CNS	Central nervous system
CRP	C-reactive protein
CT	computed tomography
CVA	cerebrovascular accident
CVD	Cardiovascular disease
DAS	disease activity score
db	the gene diabetes
dsDNA	double-stranded DNA
EBV	Epstein-Barr virus
ECG	elecrtocardiogram
ELISA	enzyme-linked immunoassay
ENA	extractible nuclear antige
ESR	erythrocyte sedimentation rate
FDA	the US Food and Drug Administration
FMD	flow mediated vasodilatation
HbA1c	Glycated hemoglobin
HLA	human leukocyte antigens

ICU	Intensive care unit
IFN	interferon
IGF1	insulin-like growth factor 1
IgG	immunoglobulin G
IgM	immunoglobulin M
IL	interleukin
JAK2	janus kinase 2
JAK-STAT	janus kinase- signal transducer and activator of transcription
LE	lupus erythematosus
LPS	lipopolysaccharide
LUMINA	Lupus in Minorities: Nature verses Nurture
MCP1	monocyte chemotactic protein 1
MAK1	mitogen activated protein kinase 1
MMPs	matrix metallo proteinases
MRA	magnetic resonance angiography
NAD	nicotinamide adenine dinucleotide
NOS2	type 2 nitric oxide synthase
NPY	neuropeptide Y
NSAIDS	nonsteroidal anti-inflammatory drugs
ob	the gene obese
PBEF	pre-B-colony enhancing factor
PI3K	Phosphatidylinositol 3-kinases
POMC	pro-opiomelanocortin
PPAR	peroxisome proliferator-activated receptor
RA	Rheumatoid arthritis
RBCs	Red blood cells
RELMs	resistin-like molecules
RNA	ribonucleic acid

RNP	ribonucleoprotein
SELENA	Safety of Estrogen in Lupus Erythematosus National Assessment
SLE	Systemic lupus erythematosus
SLEDAI	Systemic lupus erythematosus disease activity index
Sm	anti-Smith
STAT3	signal transducer and activator of transcription 3
TGF β 1	transforming growth factor beta 1
TH1	T-helper 1
TIA	transient ischemic attack
TNF	tumor necrosis factor
TTP	thrombotic thrombocytopenic purpura
WAT	white adipose tissue

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Introduction and Aim of The Work

Introduction

Systemic Lupus Erythematosus (SLE), popularly known as Lupus, is an uncommon although not rare systemic rheumatic disease which is 9 to 10 times more frequent in women than men. Although lupus may occur at any age and in both sexes it is chiefly a disorder of women of child bearing age (70% or 7 out of every 10 with the disease are women between the age of 15 and 50). Lupus is four times more common in African Americans than Caucasians and also affects Asians and Hispanics with an increased prevalence ***(Rahman A and Isenberg DA, 2008).***

SLE is a classic autoimmune disease. The immune system is intended as a defense against invading infection (i.e. viruses, bacteria, and parasites) but in lupus this system goes awry and results in the formation of molecules such as auto antibodies, immune complexes, and complement which may attack organs of the body. Although lupus is a chronic, potentially life-long condition it is characterized by episodic activity. In other words, patients unpredictably experience disease flares followed by periods of disease inactivity ***(Hahn BH, 2005).***

Additionally, during a flare, lupus may affect the skin, joints, kidney, brain, lung, heart and gastrointestinal tract although it is unlikely that in any patient all these systems would be involved. In fact, each lupus patient is unique and the severity, frequency, and extent of injury vary from patient to patient ***(Edworthy SM, 2005).***

Flares result either from increased inflammation of the blood vessels within organs of the body or, in other instances, from the formation of

blood clots within these vessels. Distinguishing between these two types of injuries is important. One is treated with anti-inflammatory medication, such as NSAIDs (nonsteroidal anti-inflammatory drugs), antimalarials (hydroxychloro-quine/plaquenil), steroids (prednisone, medrol), or in the severest situations chemotherapy (azathioprine/imuran, methotrexate, cyclophosphamide/cytoxan) while the other with medicines intended to prevent clotting, such as aspirin, ticlid, plavix, heparin, lovenox, or Coumadin ***(Hahn BH, 2005).***

Approximately half of all SLE sufferers experience kidney inflammation. In 20%, despite appropriate treatment, kidney damage develops and progresses to end stage renal disease (ESRD) ***(Rahman A and Isenberg DA, 2008).***

Adipocytokine, or adipokine, is a general term for a bioactive product produced by adipose tissue. Adipocytokines include inflammatory mediators (IL-6, IL-8), angiogenic proteins (VEGF), and metabolic regulators (adiponectin; leptin). Although adipocytes can be induced to produce almost all known adipocytokines, preadipocytes, as well as macrophages and endothelial cells resident in adipose tissue, also contribute to adipocytokine production. Not all white adipose tissue is metabolically equivalent. Visceral adipose tissue, due in part to its association with the hepatic portal venous system, appears to be a critical regulator of glucose and fat metabolism. Subcutaneous adipose tissue, by contrast, is less understood. It appears to be the principal source of leptin and adiponectin ***(Von EM et al., 2006).***

Visfatin a newly discovered adipocytokine secreted by visceral fat that mimics the effects of insulin and whose expression level in plasma increases during the development of obesity corresponds to a protein identified previously as pre-B cell colony-enhancing factor (PBEF), a 52-kilodalton cytokine expressed in lymphocytes ***(Von EM et al., 2006).***

Visfatin exerted insulin-mimetic effects in cultured cells and lowered plasma glucose levels in mice. Surprisingly, visfatin binds to and activates the insulin receptor. Further study of visfatin's physiological role may lead to new insights into glucose homeostasis and/or new therapies for metabolic disorders such as diabetes ***(Ingelsson E et al., 2007).***

Visfatin, which is related to markers of inflammation, may represent a novel link between inflammation and adipocytokines among SLE patients ***(Ingelsson E et al., 2007).***

Aim of the work

To assess the level of serum visfatin in SLE patients to assess inflammation.

Review of Literature

Systemic Lupus Erythromatosis

Background

Systemic lupus erythematosus (SLE) is a chronic, multifaceted inflammatory disease that can affect every organ system of the body. SLE is protean in its manifestations and follows a relapsing and remitting course.

Pathophysiology

SLE is an autoimmune disorder characterized by multisystem microvascular inflammation with the generation of autoantibodies. Although the specific cause of SLE is unknown, multiple factors are associated with the development of the disease, including genetic, racial, hormonal, and environmental factors **(Rahman A and Isenberg DA, 2008*).***

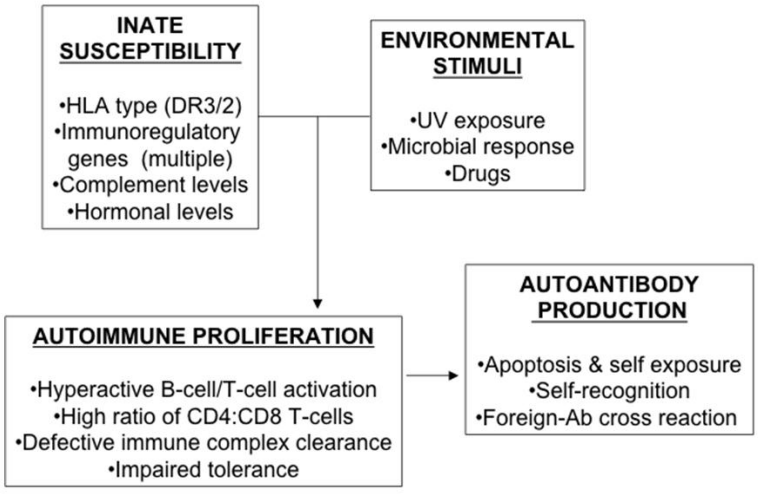

Fig (1) In systemic lupus erythematosus (SLE), many genetic-susceptibility factors, environmental triggers, antigen-antibody responses, B-cell and T-cell interactions, and immune clearance processes interact to generate and perpetuate autoimmunity (**Cooper GS et al., 1998)**.